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BACKPACK SNOW SHOVEL/SNOW SAW KIT AND AHKIO SNOW SHOVEL/SNOW SAW KIT

by

Joseph L. Carney
Environment and Survival Branch

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Final Report

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U. S. ARMY LAND WARFARE LABORATORY
Aberdeen Proving Ground, Maryland 21005

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Two snow shovel kits were developed for use in an arctic environment. One shovel having a detachable handle and a nylon cloth carrying container is for backpacking by the individual soldier. A larger, more durable shovel is for use in conjunction with the man-hauled sled (Ahkio). A snow saw in a scabbard is provided which can be attached either to the handle of the Ahkio shovel, to the disassembled backpack shovel in the carrying case, to the rucksack or to the belt.

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INTRODUCTION

The US Army Land Warfare Laboratory Alaska Liaison Officers in 1971 and in 1972 obtained information from the US Army Northern Warfare Training Center, US Army, Alaska, the 1st Scout Battalion and the 2nd Scout Battalion that special tools were required in an arctic environment for clearing areas of snow for tents, the building of block snow houses, constructing snow caves and digging during avalanche rescue. It was determined that two sizes of snow shovels were required, one for backpacking and one for carrying on the Ahkio (squad load carrying sled). There was also a need for a snow saw. At present, neither a military standard snow shovel of either size nor a snow saw was available to fulfill the requirements.

Commercially available shovels and saws were examined. Primary considerations were performance, durability, weight, compactness and transportability. The shovel chosen for carrying on the Ahkio was a standard Canadian Army item. The backpack shovel obtained commercially has a detachable handle. A cloth carrying cover for the backpack shovel was developed. A commercial snow saw was also located. A scabbard was developed for the snow saw and a method was provided for attaching it either to the handle of the Ahkio shovel, to the disassembled backpack shovel in the carrying case, to the rucksack or to the belt. The shovel blades and the saw blade were coated to prevent snow from sticking to them.

DISCUSSION

Ahkio Snow Shovel

Requirement: At present there is no military standard snow shovel for use in conjunction with the man-hauled Sled, Scow Type, 200 Pound Capacity (Ahkio). A snow shovel is a necessary item for clearing areas of snow for erecting tents, etc., for the patrol. The standard steel shovels presently used are too heavy and the blade which was designed for shoveling earth is not ideal for shoveling snow.

Description: The first step toward solving the problem was to investigate shovels which were commercially available to determine their suitability for fulfilling this requirement. In the event that none was suitable, the plan was to design, develop and fabricate an evaluation quantity of shovels. One shovel which was commercially available was determined to be satisfactory in most respects. The only questionable aspect was the length of the handle. It was obtained from True Temper (Canada) Ltd. and is manufactured according to the Canadian Department of the National Defense Directorate of Inter-Service Development Specification "Unit-6-1-3B, 10 May 1960, entitled: Shovel, Hand, Snow, C2".

The overall length is 31 inches. The blade is 10-1/2 inches wide and 12-1/2 inches long, formed from 0.101 inch thick aluminum sheet. To prevent wet snow from sticking to the blade, Xylan Formula 2014 was applied to the blade. The "Y" component of the handle is steel and the grip component is wood. The remaining part of the handle is wood (ash). The total weight of the shovel is 2-1/2 pounds (see Figure 1).

Backpack Snow Shovel

Requirement: The entrenching tool presently is used as a backpack snow shovel for the individual soldier. Because of the weight and blade size and configuration, it is not ideally suited as a snow shovel. There is a need for a compact, lightweight backpack snow shovel.

Description: Shovels obtained commercially were examined to determine suitability for use as a military backpack snow shovel. The shovel chosen as the best candidate was a Swiss Snow Shovel (Parsenn) which was obtained from Recreational Equipment, Inc., Seattle, Washington.

The blade is 7-1/2 inches wide and 10 inches long. A teflon coating was applied to prevent wet snow from sticking to the blade. The detached handle is 18 inches long and when assembled, the total shovel length is 28 inches long. The total weight of the shovel blade and handle is 1 pound 2.8 ounces. A nylon fabric carrying case with snaps for a rucksack attachment is provided. The carrying case was designed and fabricated for use with the shovel and is not commercially available. The weight of the carrying case is 5.3 ounces. The overall length of the disassembled shovel in the carrying case is 19 inches (see Figure 2).

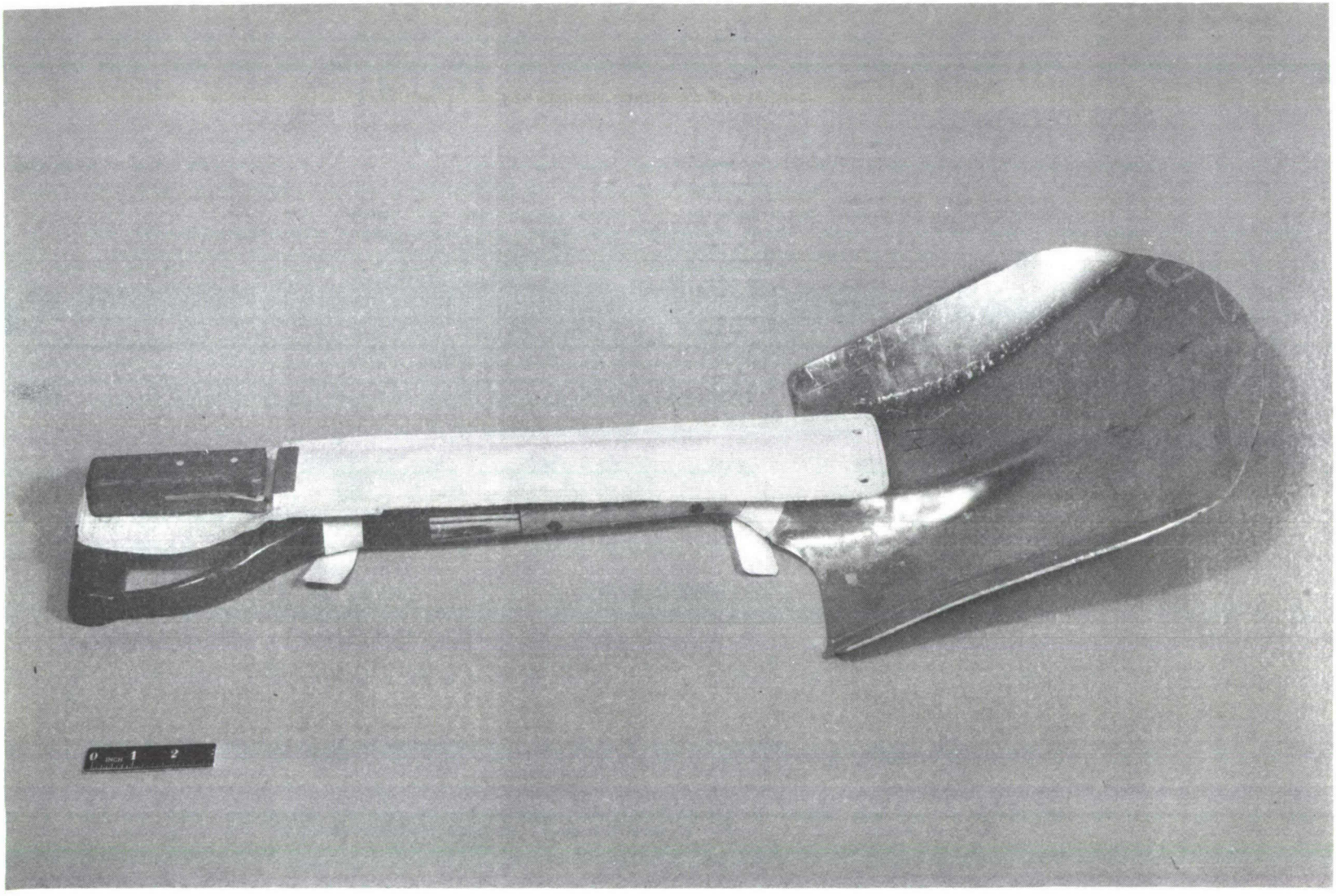

Figure 1. Ahkio Snow Shovel/Snow Saw Kit

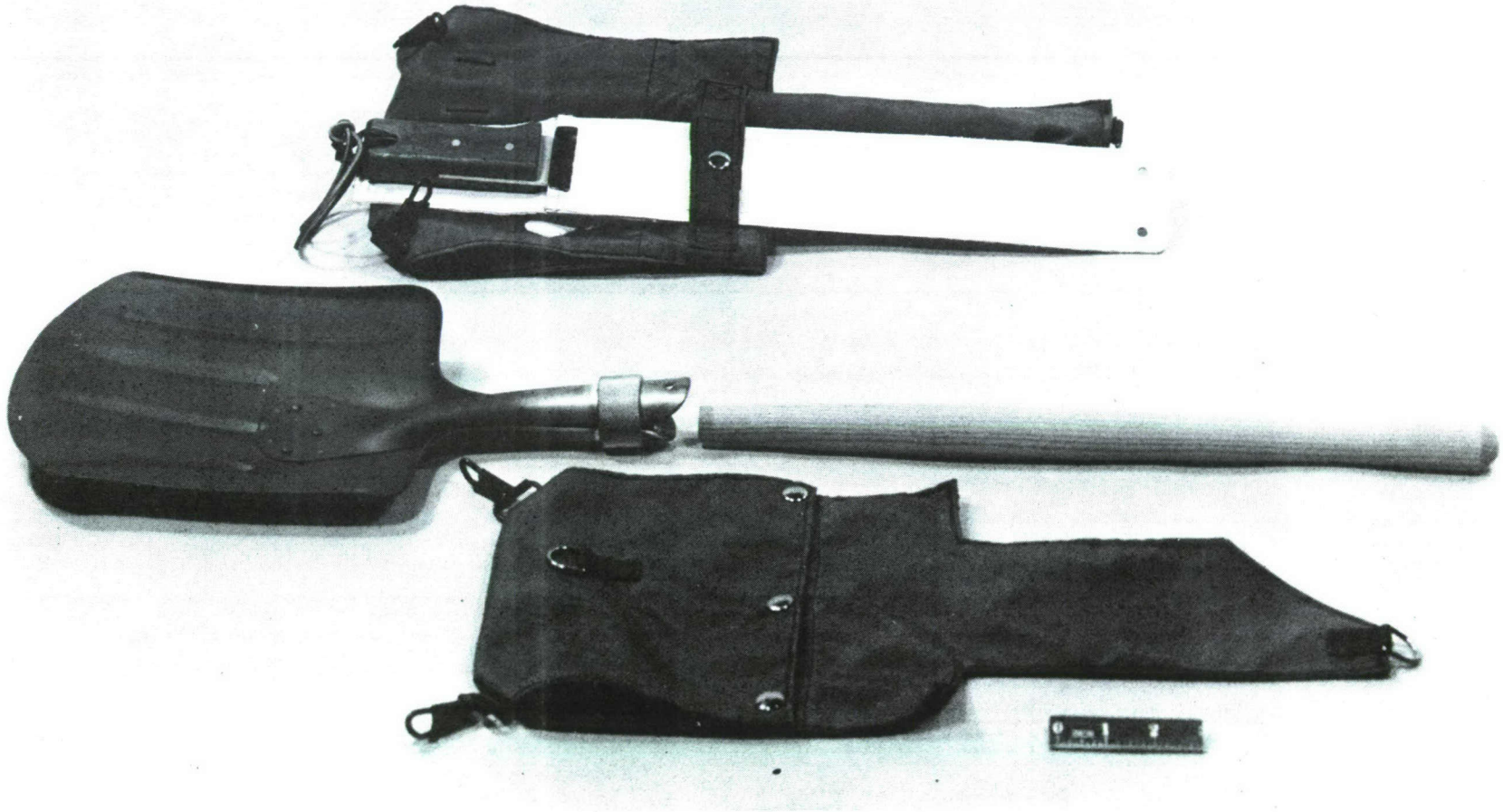

Figure 2. Backpack Snow Shovel/Snow Saw Kit

Snow Saw and Scabbard

Requirement: There is no standard military snow saw available. At present, the standard issue machete (FSN 5110-813-1286) is used for building snow houses. The machete is heavy and not ideally suited for cutting snow blocks for building snow houses.

Description: As with the backpack snow shovel and Ahkio snow shovel, snow saws which are commercially available were investigated. A snow saw (SMC Aluminum Snow Saw) obtained from Recreational Equipment, Inc., Seattle, Washington was deemed to be suitable.

The overall length is 20 inches and the total weight is 6.2 ounces. The aluminum blade is 1/8 inch thick, 15-1/2 inches long and has a special tooth design to cut packed snow. To prevent wet snow from sticking to the blade, Xylan Formula 2014 was applied to it. A sheath for the saw was designed and fabricated. The sheath has a total weight of 7 ounces. A method is provided to attach the sheath either to the handle of the Ahkio shovel, to the disassembled backpack shovel in the carrying case, to the rucksack or to the belt (see Figure 3).

Field Evaluation

US Army Arctic Test Center Feasibility Test: Twenty-five Backpack Snow Shovel/Snow Saw Kits and 25 Ahkio Snow Shovel/Snow Saw Kits were tested as USATECOM Project No. 8-EI-825-000-022 during FY 74 under intermediate cold and cold conditions.

US Army, Alaska: Six each Backpack and Ahkio Kits were field evaluated by US Army, Alaska.

10th Special Forces Group, Fort Devens, Massachusetts: Three of each kit were field evaluated by the 10th Special Forces Group at Fort Devens, Massachusetts.

Results of these evaluations had not been received at the time of publication of this report.

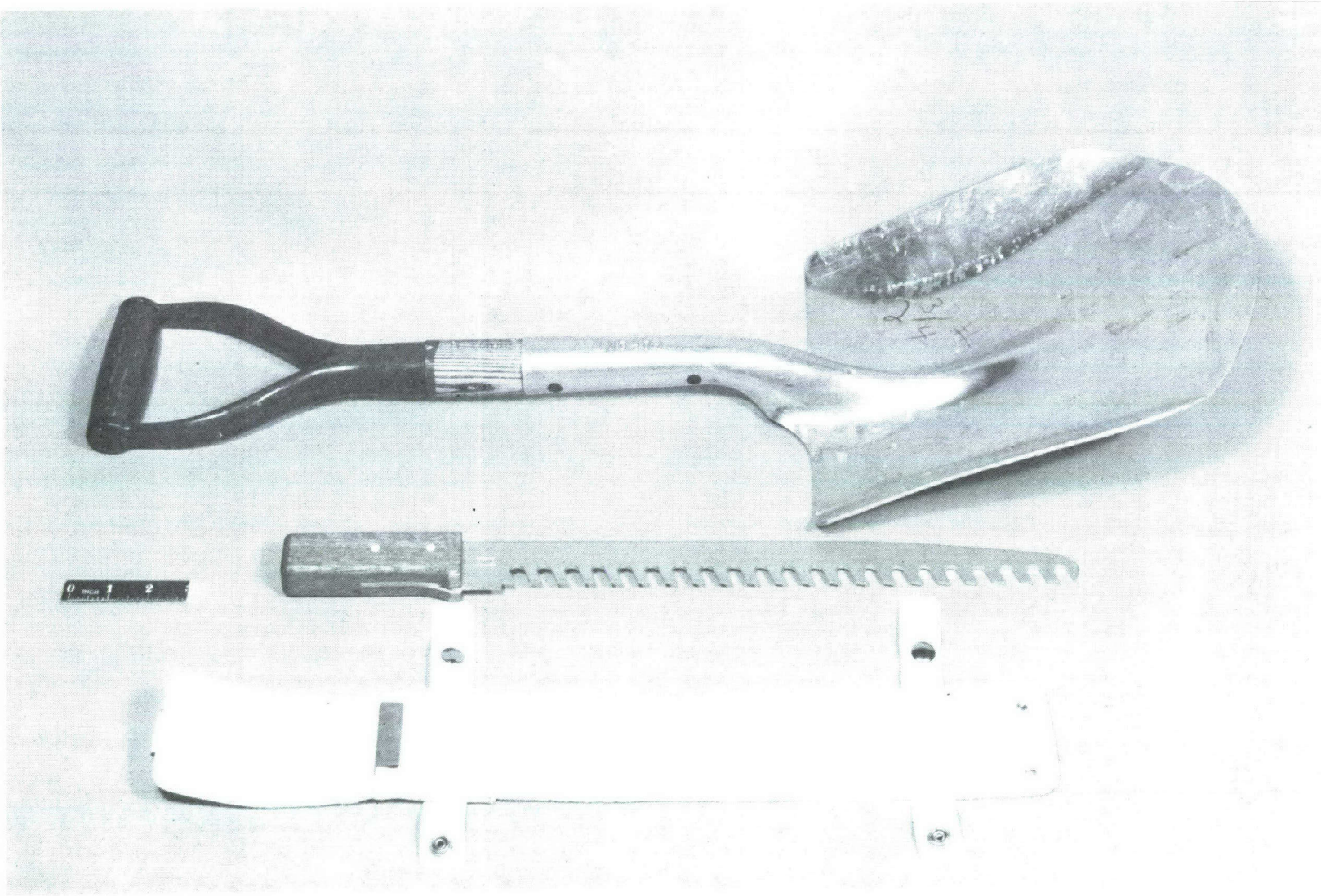

Figure 3. Snow Saw/Snow Saw Scabbard/Ahkio Shovel

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